

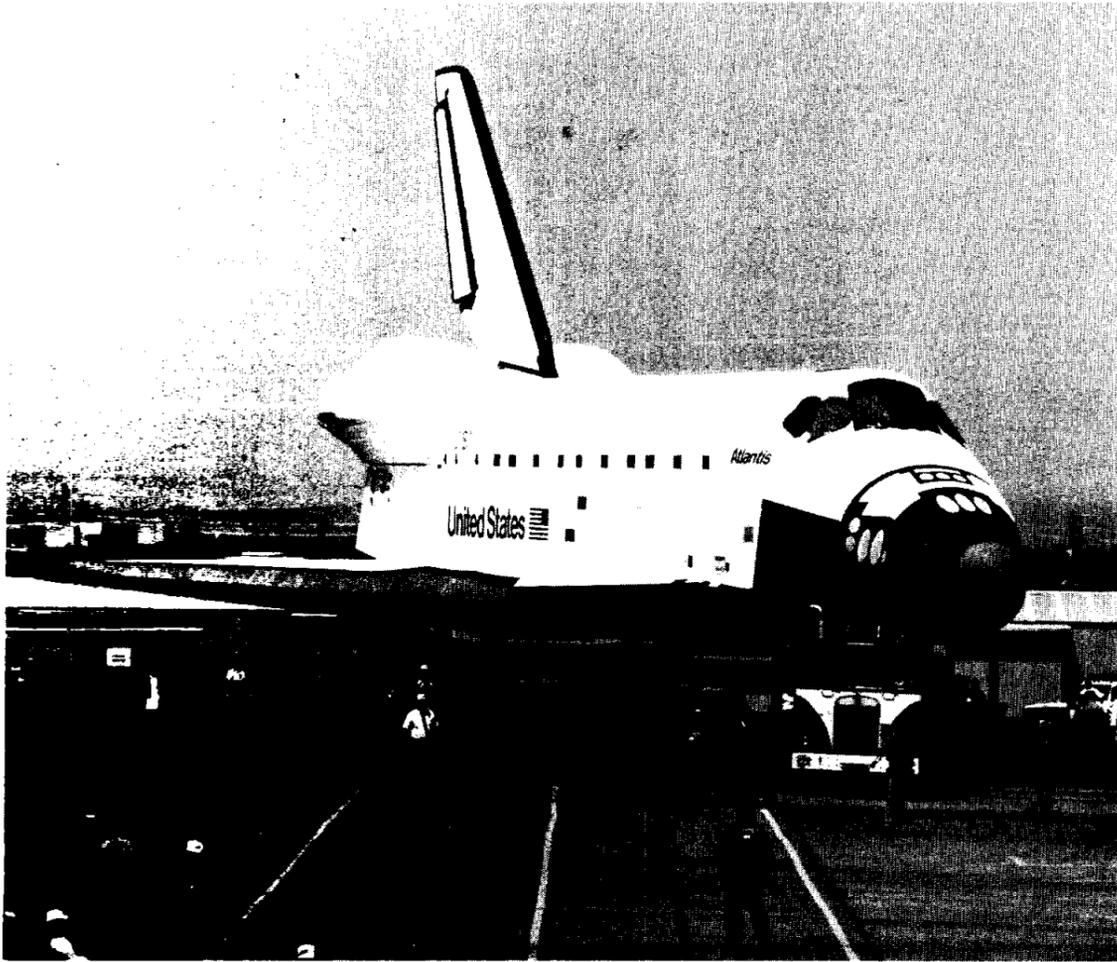
Space News Roundup

Vol. 24 No. 7

April 12, 1985

National Aeronautics and Space Administration

With Atlantis, Shuttle fleet now complete



Orbiter Vehicle 104, the *Atlantis*, turns a corner at the Rockwell Orbiter Assembly Plant in Palmdale during rollout ceremonies. The orbiter was delivered to the Cape last week, completing NASA's four orbiter fleet.

After a stopover at Ellington Field last week, the new Orbiter *Atlantis* is scheduled to begin pre launch processing at the Kennedy Space Center for her maiden flight later this year.

Officially designated OV 104, *Atlantis* completes the currently authorized fleet of Space Shuttle orbiters. It is essentially a twin of *Discovery*, the third spaceship in the fleet. The ship is named after a two-masted ketch which was operated for the Woods Hole Oceanographic Institute from 1930 to 1966.

After the Shuttle Carrier Aircraft landed at KSC, it taxied up to the runway's mate-demate structure, where *Atlantis* was hoisted off the back of the jumbo jet. The entire operation to offload the orbiter, lower it on its gear, and tow it to the Orbiter Processing Facility took approximately 16 hours.

Initial activities at the processing hangar will include jacking the ship up and positioning work platforms, hooking the orbiter up to ground support equipment, and preparing for initial power up and opening of the payload bay doors.

Other post-delivery operations include removal of the aerodynamic tail cone and removal of the dummy orbital maneuvering system pods.

Following its receiving inspection and post-ferry flight activities, *Atlantis* will begin processing for its maiden flight, a dedicated Department of Defense mission targeted for late September.

That processing flow will include main propulsion system testing, installation of three main engines, installation of two orbital maneuvering system pods, checkout and functional testing of orbiter systems, and normal preflight servicing activities.

After *Challenger's* return from the Spacelab 3 Mission in early May, *Atlantis* will be moved to temporary storage in the Vehicle Assembly Building for approximately two weeks. Its processing will resume when the other orbiter hangar bay becomes available.

Because this is the first processing flow of a new orbiter, an on-the-pad Flight Readiness Firing of *Atlantis's* main engines is planned for August.

Atlantis has been outfitted with special modifications needed to support the Galileo and Ulysses missions in 1986. These modifications include the payload bay plumbing and necessary umbilical connections for cryogenic servicing of the Centaur upper stage.

The new orbiter also includes structural modifications to the wings and midbody.

Atlantis, when dry with the engines installed, should weigh approximately 169,800 pounds. Its thermal protection system consists of more than 24,000 tiles, nearly 1300 thermal protection blankets, and coated nomex felt surface insulation.

President names commission on space

President Reagan has named a 14-member National Commission on Space to develop civilian space goals for the 21st Century.

The announcement came March 29 before the National Space Club, which awarded the prestigious Goddard Memorial Trophy to the President in recognition of his support for the space program.

The commission will be chaired by former NASA Administrator Thomas O. Paine, and also includes astronaut Dr. Kathryn D. Sullivan of JSC.

Reagan said the panel would "look beyond the short-term steps

to develop long-term goals for our national civilian space enterprise," and would "devise an aggressive civilian space agenda to carry America into the 21st Century."

In awarding the Goddard Trophy, named for U.S. rocket pioneer Robert Goddard, the National Space Club cited Reagan "for his inspirational leadership and vision in establishing new national goals assuring the U.S. pre-eminence in the use of space for peace." Reagan is the second U.S. president to receive the trophy since it was first awarded in 1958 to Dr. Werner von Braun.

President Lyndon B. Johnson received the award in 1966.

Reagan also named outgoing U.N. Ambassador Jeane Kirkpatrick to the commission, as well as Apollo 11 Commander Neil Armstrong and Air Force Brig. Gen. Chuck Yeager. Armstrong was the first man to walk on the Moon, Sullivan the first American woman to walk in space, and Yeager the first person to break the sound barrier.

Other members of the commission are:

Laurel Wilkening, 40, vice provost of the University of Arizona

and a former NASA scientist. Wilkening will serve as vice chairman of the commission;

Luis Alvarez, 73, a physicist at the Lawrence Berkeley Laboratory in California;

Paul Coleman, 53, President of the Space Research Association and professor of geophysics and space at the University of California at Los Angeles;

George Field, 55, senior physicist at the Smithsonian Astrophysical Observatory and a professor of astronomy at Harvard University;

Retired Marine Gen. William Fitch, 55, former deputy chief of

staff for Marine aviation;

Charles Herzfeld, 59, vice president and director of research and technology with ITT Corp.;

J.L. Kerrebrock, 57, head of the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology;

Gerard K. O'Neill, 58, President of Geostar Corp. in Princeton, New Jersey and popularizer of the "High Frontier" studies of the 1970s for space colonies and utilization of space resources;

David Webb, 56, a space consultant and founding member of the National Coordinating Committee for Space.

Lunney announces plans to leave NASA

National Space Transportation System Manager Dr. Glynn S. Lunney, who was a member of the Space Task Group which inaugurated U.S. manned space flight, has announced his intention to leave NASA in the near future. Lunney said he plans to pursue opportunities outside government. The exact date of his departure has not been announced.

Lunney, whose career almost exactly spans the period of American efforts in space, began his government service with NASA's predecessor, the National Advisory Committee for Aeronautics, at the Lewis Research Center in Cleveland in May 1958. From his position there as an aerospace research engineer, he moved to the Space Task Group in September 1959.

When the Space Task Group became the Manned Spacecraft

Center, Lunney moved with it to Houston from the Langley Research Center in Hampton, Va. From April 1962 to August 1964 he was Head of the Mission Logic and Computer Hardware Section. In August 1964, he became Chief of the Flight Dynamics Branch and was also appointed as a Flight Director for the Gemini program in the same year that Mission Control began its operations in Houston.

In July 1968, one year before the first manned landing on the Moon, Lunney was appointed Chief of the Flight Director's Office, a position he held until March 1972.

At that time, he became Special Assistant to the Manager of the Apollo Spacecraft Program, and then three months later, in June 1972, became Manager for Operations, Experiments and Govern-

ment Furnished Equipment for the Apollo Spacecraft Program. In March 1973, he became Manager of the Apollo Spacecraft Program. During that period he held a dual role, also acting as Manager of the Apollo Soyuz Test Project.

In July 1975, Lunney's career changed course towards a new type of space flight with the Space Shuttle. At that time he became Manager of the Shuttle Payload Integration and Development Program, which was redesignated the STS Operations Program in July 1980. In that role, he was responsible for directing the planning and implementation for all payloads and payload carriers to be used in the Shuttle program.

During his tenure as STSOP manager, he was detailed to Headquarters from November 1976 to July 1977 as Deputy Associate Administrator for Space

Flight, and from November 1979 to July 1980 as Acting Associate Administrator for Space Transportation Operations.

In 1981, he was appointed to his current position as Manager of the National Space Transportation Systems Program. Responsibilities of the job include overall systems management and integration of all elements of the program. The office is directly responsible for vehicle system engineering, design and integration, including the integration of payloads and payload carriers aboard the Shuttle.

Lunney has earned numerous awards and citations during his career, including the Lawrence Sperry Award, the Arthur S. Fleming Award, the Louis W. Hill Space Transportation Award, the Allan D. Emil Memorial Award, the W. Randolph Lovelace II

Award, an honorary doctorate of laws from the University of Scranton, three NASA Group Achievement Awards, two NASA Distinguished Service Medals, an Outstanding Leadership Medal, and Senior Executive Service designations.

He is a member of Pi Tau Sigma, Tau Beta Pi, and has been elected to the rank of fellow in both the American Astronautical Society and the American Institute of Aeronautics and Astronautics.

He was born in Old Forge, Pennsylvania in November 1936 and attended the University of Scranton from 1953 to 1955. He received a bachelor of science degree in aeronautical engineering from the University of Detroit in 1958.

Lunney and his wife, the former Marilyn Jean Kurtz, have four children and reside in Friendswood, Texas.

Bulletin Board

Security to reward good drivers

Stepped up enforcement of JSC driving regulations has many onsite drivers paying greater attention to slow speeds and safety, Security Chief David Troupe says, and now Security plans to reward drivers with good records. Since February, an intense campaign has been under way to reduce traffic speeds center wide, resulting in 400 citations. In the last few weeks, the number of citations issued has decreased, Troupe said, indicating a greater awareness on the part of drivers. Now Security plans to reward the drivers who have citation free driving records. Forty will be selected at random in the next six months to receive a complimentary luncheon and two theater passes. Those eligible will be chosen from the list of drivers with no citations over the last year, Troupe said.

"Space" and "Spaceflight" to air

"Space," a 13-hour CBS mini-series, and "Spaceflight," a four-hour PBS documentary, will premiere on network television in the next few weeks. "Space," based on the novel by James A. Michener, will air in five parts beginning at 7 p.m. Sunday, April 14 and running for the next four nights. Several scenes for the mini-series were shot at JSC and KSC. "Spaceflight," a comprehensive history of rocketry and space exploration, will air at 8 p.m. Wednesday, May 8, and then run for the next three consecutive Wednesday evenings. The documentary features on-camera interviews with some 40 key participants, including former JSC Director Christopher C. Kraft, Jr., Mission Operations Director Gene Kranz, and Astronaut Sally Ride. Additionally, Kraft will narrate a 3-minute space-oriented commercial which will be seen during the mini-series "Christopher Columbus" in May.

Slayton to address AIAA forum

Deke Slayton, former head of the Shuttle Orbital Flight Test Program and now President of Space Services, Inc., will discuss space commercialization at the next monthly forum program sponsored by the Houston Section of the AIAA. Slayton's talk, "Space Commercialization: Expendable Launch Vehicle Issues," will be held from 11:30 a.m. to 12:30 p.m. April 18 in the Bldg. 30 auditorium, first floor, just off the main lobby. The talk is free and open to the public. Badges can be obtained at the Security desk in the Bldg. 30 lobby. For more information, call Garland Bauch, x5844, or Henry Schneider, 486-4420.

YMCA sponsoring trip for teens

The Bay Area YMCA is sponsoring a trip for teens to Florida in July which will include viewing of the 51-F launch from KSC. There are five or six openings left for interested teens. The agenda includes a tour of Disney World and a trip to the Florida Keys. The cost is \$550 per person, which includes all transportation and meals. Through car washes and other group activities, the YMCA is helping the teens raise that money. For more information, call Nancy Perkins at 480-2605.

Symphony concert set for May 18

The Clear Lake Symphony will close its ninth season May 18 with a program dedicated to "The Music of Britain." The featured soloist will be harpist Joan Eidman-Baum, a Houston musician, performing Handel's Harp Concerto. The concert will begin at 8 p.m. in the Auditorium of the University of Houston-Clear Lake. Tickets are \$4, or \$2 for senior citizens and students. For more information, call 488-1754.

"Space Walk" to benefit Ed White Center

Planning is underway for the first annual "Space Walk," a dinner dance benefit in support of the Ed White Youth Center in Seabrook. The benefit will be held beginning at 7 p.m. May 25 at the Gilruth Recreation Center. The event will commemorate the first American EVA in June 1965. The youth center began operations with \$500 White donated from the Haley Award he received for his famous spacewalk. Seating for the event is limited to 450 people, and tickets are \$50 per person. The Center will also sponsor a fun run June 1. The one mile and five kilometer race will begin at 8 a.m. June 1 at the Clear Lake Park on NASA Road One. The entry fee is \$6, \$8 on race day. Registration forms for the race are available at the Gilruth Center. For more information on the dinner dance, call Barbara Payne, 474-2854, or Marty Stovall, 474-2658.

Paris Air Show tour planned

Dr. Roger Bilstein, professor of history at the University of Houston-Clear Lake and author of the recent book "Flight in America," will escort a tour group to Europe in June for the Paris Air Show. The trip, to last from June 1 to June 16, includes stops in London, Dover, Paris, Geneva, Lucerne and Munich. The tour is being coordinated through the Clear Lake Travel Agency. The price for double occupancy is \$2,129, for single occupancy, \$2,274. Reservations are due May 1. For more information, call Susan at Clear Lake Travel, 488-7718, or Bilstein at 488-9310.

Gilruth Center News

Call x3594 for more information

Almost anything goes — Teams may now enter competition leading toward finals of this event at the JSC Picnic May 4. The rules of events in this contest are known only to the Rec Center staff. Teams should consist of four males and four females. The cost is \$10 per team and T-shirts will be given. The dates for the preliminary competition will be determined by the number of entries. The deadline is April 25. For more information, call Helen Munk at x3594.

Garage sale — Shop the annual Rec Center garage sale from 9 a.m. to 3 p.m. April 27. Tables are \$2 per person, first come, first served. Advanced registration for vendors is required.

NASA
Lyndon B. Johnson Space Center

Space News Roundup



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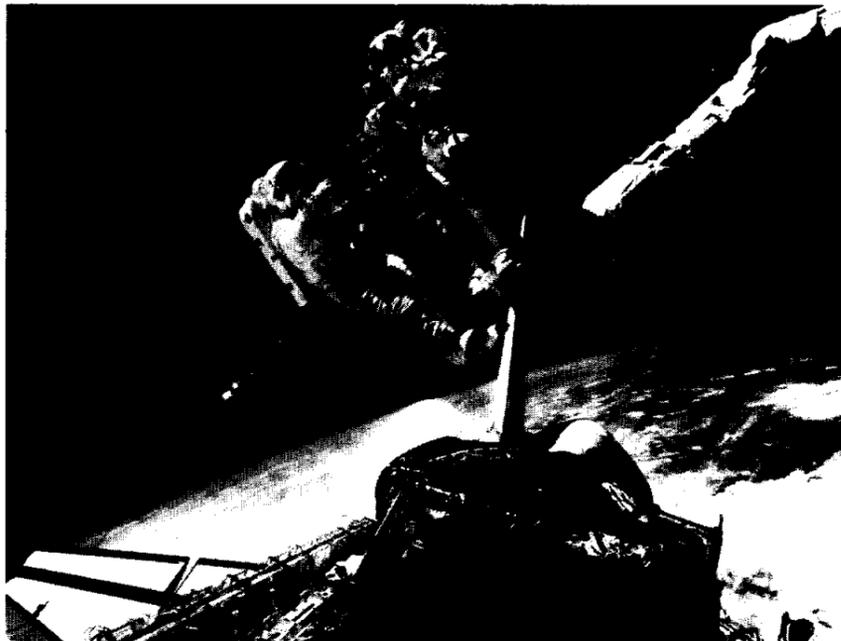
Editor Brian Welch
Editorial Assistant Tina Griego

The Manifest

Mission	Date/Orbiter	Payloads	Crew
51-B	April 29, 1985 <i>Challenger</i>	Spacelab 3 NUSAT GLOMR	Overmyer, CDR Gregory, PLT Lind, MS Thagard, MS Thornton, MS van den Berg, PS (EG&G Corp.) Wang, PS (JPL)
51-G	June 12, 1985 <i>Discovery</i>	Telstar-3D Morelos-A Arabsat-1B Spartan-1 FEE/FPE	Brandenstein, CDR Creighton, PLT Lucid, MS Fabian, MS Nagel, MS Baudry, PS (France)
51-F	July 15, 1985 <i>Challenger</i>	Spacelab 2	Fullerton, CDR Bridges, PLT Musgrave, MS England, MS Henize, MS Acton, PS (Lockheed) Bartoe, PS (USN civilian)
51-I	Aug. 10, 1985 <i>Discovery</i>	Syncom IV-4 ASC-1 MSL-2 Aussat-1 CFES	Engle, CDR Covey, PLT van Hoffen, MS Lounge, MS W. Fisher, MS Jarvis, PS (Hughes) Walker, PS (McDonnell Douglas)
51-J	Sept. 26, 1985 <i>Atlantis</i>	DOD	Bobko, CDR Grabe, PLT Hilmers, MS Stewart, MS
61-A	Oct. 16, 1985 <i>Columbia</i>	Spacelab-D1	Hartsfield, CDR Nagel, PLT Buchli, MS Bluford, MS Dunbar, MS Furrer, PS (DFVLR) Messerschmid, PS (DFVLR) Ockels, PS (ESA)
61-B	Nov. 8, 1985 <i>Challenger</i>	Morelos-B Satcom KU-1 Aussat-2 EOS-1	Shaw, CDR O'Connor, PLT Cleave, MS Spring, MS Ross, MS Morelos PS McDonnell Douglas PS
61-C	Dec. 20, 1985 <i>Columbia</i>	MSL-3 HS-376 Satcom KU-2 EASE/ACCESS	Gibson, CDR Bolden, PLT Chang-Diaz, MS Hawley, MS Nelson, MS RCA PS
51-L	Jan. 22, 1986 <i>Challenger</i>	TDRS-D Spartan/ Halley Comet	Scobee, CDR Smith, PLT Resnik, MS Onizuka, MS McNair, MS Spaceflight participant
61-E	March 6, 1986 <i>Columbia</i>	Astro-1 Westar 7	McBride, CDR Richards, PLT Parker, MS Leestma, MS Hoffman, MS Astro PS (2)
62-A	March 20, 1986 <i>Discovery</i>	DOD	Crippen, CDR G. Gardner, PLT D. Gardner, MS Ross, MS Mullane, MS
61-F	May 15, 1986 <i>Challenger</i>	Ulysses (ISPM)	Unannounced
61-G	May 21, 1986 <i>Atlantis</i>	Galileo	Unannounced
61-H	June 23, 1986 <i>Columbia</i>	EOS-2 Palapa B3 STC DBS-A Skynet-4A	Coats, CDR Blaha, PLT A. Fisher, MS Thagard, MS Springer, MS Indonesian PS British PS
61-J	Aug. 8, 1986 <i>Atlantis</i>	Hubble Space Telescope	MS only announced Sullivan, MS Hawley, MS McCandless, MS

Index to Sh

Acronym	Name
ACES	Acoustic Containe Experiment Syste
ACTS	Advanced Comm. Technology Satel
ADSF	Automatic Directi Solidification Furr
AFE	American Flight Echocardiograph
ALE	Atmospheric Lum Experiment
APE	Aurora Photograp Experiment
ARABSAT	ARAB Satellite
ARC	Aggregation of Re
ART	Amateur Radio Tr
ASC	American Satellite Company
ASTRO	Ultraviolet Astron Telescope (forme
AUSSAT	Australian Comm. Satellite
BRE	Blood Rheology Experiment
C2-SPACELINES	Commercial Carg Spacelines
C-360	Cinema-360
CANEX	Canadian Payloac Specialist Experir
CBSC	China Broadcasti. Satellite
CENTAUR	Centaur
CFES	Continuous Flow Electrophoresis S
CFMF	Cryogenic Fluid Management Faci
CLOUDS	Structures Photo Experiment
COBE	Cosmic Backgrou. Explorer
CPL	Capillary Pump L. Explorer
CRRES	Combined Releas Radiation Effects
DBS	Direct Broadcast
DBS LUX	
DMOS	Diffusive Mixing c Organic Solution:
DOD	Department of De
EASE/ACCESS	Experimental Ass Structures in EVA Concept for Cons Erectable Space S
EEVT	Electrophoresis E Verification Test
EML	Electromagnetic I Payload
EOM	Environmental Ot Mission
EOS	Electrophoresis C in Space
ERBS	Earth Radiation B Satellite
EURECA	Europe Retrieval Carrier
EUVE	Extreme ultraviolt Experiment
FDE	Fluid Dynamics E
FEE	French Echocard. Equipment
FORDSAT	
FPE	French Postural E
FTDI	Fluid Transfer Dy Investigation
GALAXY-KU	GALAXY-KU Ban
GALILEO	GALILEO
GARD	Gamma Radiator Detection
GAS	Get Away Specia
GAS BRIDGE	Get Away Specia
GLOW	GLOW
GOES	Geostationary Op. Environmental Sa
GPS	Global Positionin
GRO	Gamma Ray Obs
GSTAR	GSTAR
HBT	Heliox Bioengine
HH-G	Hitchhiker (Godd Flight Center vers
HH-M	Hitchhiker (Marst Flight Center vers
HNC	Heavy Nuclei Col
HST	Hubble Space Te.



Shuttle operations through 61-J

Shuttle Payloads

Description	Acronym	Name	Description	Acronym	Name	Description
Technical demonstration to obtain early microgravity tests of gas transport phenomena in a 3-axis levitation furnace.	IBSE	Initial Blood Storage Equipment	Evaluates changes in blood tissue during various storage conditions.	SAX	X-Ray Astronomy Satellite	Scientific study of celestial x-ray sources.
Flight verification of high risk communications technology to support future communication systems.	IEF	Isoelectric Focussing Experiment	Gather experimental data on the extent of electro-osmosis in space.	SBS	Satellite Business Systems	All digital domestic communication system servicing large industry, the government, etc.
Technology demonstration of directional solidification of magnetic materials, immiscibles, and IR detection materials. Collects quantitative in-flight data on cardiovascular changes in the crew.	IMAX	Imax, Inc. of Toronto, Ontario, Canada	Produces motion pictures of orbiter launch, inflight operations and landings suitable for viewing in IMAX theaters such as the Smithsonian.	SBTS-A4		Brazilian telecommunications satellite system.
Investigates the ion chemistry of the atmosphere and orbiter surfaces.	IML	International Microgravity Laboratory	Microgravity missions devoted to material sciences and life sciences studies.	SEMS	Shuttle Environment Monitoring System	Measures Space Shuttle cargo bay environment under launch, flight, and landing conditions.
Enhance understanding of the geographic extent and dynamics of the aurora.	INSAT	Indian National Satellite System	Communication and meteorological satellite.	SHEAL	Shuttle High Energy Astrophysics Laboratory	Study of astronomical objects, obtaining images, spectra and timing data on celestial x-ray sources.
Saudi Arabian Communications Satellite.	INTELSAT	International Telecommunications Satellite	International telecommunications satellite network.	SIRTF	Shuttle Infrared Telescope Facility	Facility which hosts experiments that increase our understanding of the formation and evolution of stars, planets, galaxies, and unusual galactic objects.
Studies aggregation of red cells and blood viscosity under low-g conditions.	IOCM	Interim Operational Contamination Monitor	Measures molecular and particle contamination in the Shuttle bay.	SKYNET	United Kingdom Communication Satellite	Military communication satellite for the Royal Navy.
Establishes communication between radio operator on the Shuttle and operator on the ground.	IRAS	Infrared Astronomical Satellite	Infrared telescope.	SL 1	Spacelab 1	Demonstrate Spacelab's capabilities for multidisciplinary research.
Provides commercial communication service via satellite to CONUM, Hawaii, Alaska, and Puerto Rico.	IRIS	Italian Research Interim Stage	An expendable vehicle capable of placing payloads up to 60 kg into orbit.	SL 2	Spacelab 2	Demonstrate Spacelab's capabilities for multidisciplinary research and verify system performance.
Three-mission program designed to obtain UV data on astronomical objects.	IRT	Integrated Rendezvous Radar Target	A target for testing of Shuttle orbiter rendezvous techniques and capabilities in orbit.	SL 3	Spacelab 3	Dedicated materials processing mission emphasizing 0-g research.
Direct broadcast communication satellite which provides services to continental Australia and off-shore territories.	ISAL	Investigation of STS Atmospheric Luminosities	Determine the spectral content of the orbital luminosity.	SLS-1	Space Life Sciences Laboratory 1	Investigate the effects of weightlessness exposure using both man and animal specimens.
Technology demonstration of this apparatus to study aggregation of red blood cells and blood viscosity under low-g conditions.	ISTP	International Solar Terrestrial Program	Performs optical and in-situ measurements on the outer atmosphere of the sun, the solar interior, the corona and the solar wind.	SLS-2	Space Life Sciences Laboratory 2	Refight of SLS-1.
Performs launch and other required services for C2 mixed cargo.	ITALSAT	Italian Communication Satellite System	Satellite housing telecommunication and propagation experiments.	SLS-3	Space Life Sciences Laboratory 3	Exploration of the effects of acute weightlessness on living systems.
35mm motion picture camera for the purpose of photographing crew and mission activities.	IUS	Inertial Upper Stage	Solid rocket booster developed to place satellites in high orbits.	SLS-4	Space Life Sciences Laboratory 4	Generic life sciences laboratory mission.
Experiment package flown with Canadian payload specialists on mission 41-G.	LAGEOS	Laser Geodynamics Satellite	High precision geographical measurements.	SMRM	Solar Maximum Repair Mission	Conducts a technology demonstration of the STS capability to rendezvous, service, checkout and deploy.
Television and sound broadcasting satellite.	LANDSAT		Earth resources monitoring satellite.	SOT	Solar Optical Telescope	Performs very high spatial resolution observations of the sun.
General Dynamics hydrogen/oxygen upper stage.	LDEF	Long Duration Exposure Facility	Free-flying satellites providing accommodations for experiments requiring long-duration exposure to the space environment.	SPACELAB D-1	German Spacelab Mission D-1	First dedicated DFVLR mission (Deutsche Forschungs-und Versuchsanstalt fur Luftund Raumfahrt e.V.).
Demonstrates the technology of pharmaceutical processing in space.	LDEF RETR	Long Duration Exposure Facility Retrieval	Retrieve and return the LDEF to earth so results may be analyzed.	SPACELAB D-2	German Spacelab Mission D-2	Dedicated application and technology science mission.
Re-usable research facility to establish technology base for 0-g cryogenic fluid management system.	LEASECRAFT	Leasecraft	Fairchild modular utility satellite - a shuttle-serviced, low-orbiting space platform for lease.	SPACELAB D-4	German Spacelab Mission D-4	GIRL - German Infrared Radiation Laboratory.
Cloud formation, dissipation and opaqueness observations.	LFC	Large Format Camera	Acquire synoptic, high-resolution images of the Earth's surface.	SPACELAB J	Japanese Spacelab Mission	Microgravity mission with emphasis on materials processing and life science experiments.
Study the diffuse radiation of the universe.	LM	Long Module	Spacelab element composed of a core segment and an experiment segment.	SPACENET	Southern Pacific Satellite Company Communications Satellite	A 3-axis stabilized telecommunication satellite used to provide domestic/commercial common carrier.
Determine 0-g performance of a capillary pump loop heat acquisition system.	LS-D	Landsat Repair (Landsat D)	Rendezvous, capture, repair, and deploy a Landsat D spacecraft using the STS.	SPARTAN-1	Spartan	X-ray astronomy, medium energy survey mission.
Study the upper atmosphere and ionosphere by releasing trace metal vapors.	MARC-DN	Measurement of Atmospheric Radiance Camera-Day/Night	Test fly TV camera against celestial, earthlimb and ground targets with various lighting conditions.	SPARTAN-2	Spartan	Study of solar physics.
Radio-Tele-Luxembourg direct broadcast satellite.	MAST	Structural Technology Demonstration	Demonstrate structural integrity through deployment, retraction and restowage, and develop techniques for distributed control and adaptive control methods.	SPARTAN-3	Spartan	Ultra violet imaging of a variety of sources.
Grow crystals of organic compounds for research programs within the 3M Corporation's Science Research Laboratory.	MEA	Materials Equipment Assembly	Conducts materials processing experiments in low-g environment.	SPARTAN-HALLEY		Search for molecules containing nitrogen, carbon or sulfur and observes the UV spectrum between 2100 and 3400A.
Measures the human factors while assembling structures in space during EVA.	MLR	Monodisperse Latex Reactor	Produces monodisperse latex particles in the two to forty micron range.	SPAS-01	German Shuttle Pallet Satellite	Demonstrates the utilization of the MBB platform and systems as a carrier for science experiments.
Technology demonstration of apparatus to evaluate the effects of electrophoresis of biological cells in 0-g.	MORELOS	MORELOS	Mexican communication satellite system.	SP PLASMA	Space Plasma Laboratory	
Technology demonstration to observe the flow of the surface of a containerless molten metal.	MPESS	Mission Peculiar Experiment Support Structure	Experiment carrier.	SRL	Shuttle Radar Laboratory	Acquires photographic and radar images of the Earth's land and oceanic surfaces.
Measure long term variability in the total energy radiated by the sun and determine the variability in the solar spectrum.	MSL	Materials Science Laboratory	Performs materials processing experiments in low-g.	SRT	Space Radiation Test (now RME)	Measure gamma radiation levels in the Shuttle environment.
Produce pharmaceuticals for large scale tests leading to FDA approval and commercial production.	NOAA	National Oceanic and Atmospheric Administration	Provides continuation of Polar Operational Meteorological Satellite System for the Department of Commerce (NOAA).	SSC	Solid Surface Combustion	Determine flame spread mechanisms and rates over solid surfaces in the absence of gravity-induced free convection and externally imposed flow.
Collects global earth radiation budget data.	NOSL	Night/Day Optical Survey of Lightning	Optical survey of lightning.	SSIP	Shuttle Student Involvement Projects	Student projects flown on Shuttle.
Platform placed in orbit for six months offering conventional services to experimenters.	OASIS	OEX (orbiter experiments) Autonomous Supporting Instrumentation System	Independent system that can be flown with a payload to acquire and store environment data.	STC DBS	Satellite Television Corp. Direct Broadcast Satellite	Direct broadcast satellite subscription TV.
Survey the sky in the EUV band (100-1,000 angstrom).	OAST	Office of Aeronautics and Space Technology	Demonstration of a large light-weight solar array which is capable of being restowed in flight.	SUNLAB	Spacelab 2 Solar Telescope	Study small-scale structures on the Sun's surface and measure the coronal helium abundance.
Obtains on-orbit cardiovascular system data.	OIM	Oxygen Interaction with Materials		SYNCOM	HUGHES Geosynchronous Communication Satellite	Provides communication services from geosynchronous orbit principally to the US government.
Ford Aerospace Corporation communication satellite.	OMV	Orbital Maneuvering Vehicle	Supplements the STS capability for satellite payload delivery, retrieval and maneuvering.	TDRS	Tracking and Data Relay Satellite	NASA Communication Satellite.
Studies sensory-motor adaptations in weightlessness.	OPEN	Origin of Plasmas in Earth's Neighborhood	Obtain the first quantitative assessment of the flow of energy through the geospace environment.	TELESAT	Canadian Telecommunication Satellite	Communication satellite built by Telesat Canada, LTD. to provide voice and TV coverage to trans-Canada network of Earth stations.
Evaluates fluid dynamics associated with filling capillary/screen retention propellant tanks.	ORION	Orion	Orion Satellite Corporation communications satellite.	TELSTAR	AT&T Communications Satellite	AT&T COMSTAR replacement - provides communication services to the continental US, Alaska, Hawaii, and Puerto Rico.
Hughes domestic and commercial communication satellite.	ORS	Orbiter Refueling System	Demonstrates STS's ability to perform on-orbit satellite refueling.	TEMPS-III-A	Large, High Capacity Heat Pipe Radiator	Evaluate on-orbit thermal performance of a heat pipe radiator element designed for Space Station heat rejection system application.
Investigates the chemical composition and physical state of Jupiter's atmosphere and satellites.	OSS-2 DXS	Office of Space Science Diffuse X-Ray Spectrometer	Conducts x-ray observations on a variety of objects in the 44 to 84 angstrom wavelength region.	TLD	Thermoluminescent Dosimeter	Obtains gamma ray measurements of the Shuttle environment.
Measures gamma radiation levels in the Shuttle environment.	OSS-3	Office of Space Science (currently ASTRO)	Obtain UV data on astronomical objects.	TOPEX	Ocean Topography Experiment	Remotely sense the global oceans.
Small self-contained payload containers providing conventional support to experiments.	OSTA-2	Office of Space and Terrestrial Applications	Cooperative mission with the Federal Republic of Germany on materials processing experiments in low-gravity.	TSS	Tethered Satellite System	Demonstrate system capabilities by deploying and retrieving tethered satellite and measuring engineering data from payload on satellite.
Hughes domestic and commercial communication satellite.	OSTA-3/5/7	Office of Space and Terrestrial Applications	Acquire photographic and radar images of the Earth's surface.	UARS	Upper Atmospheric Research Satellite	Study the physical processes acting within and upon the stratosphere, mesosphere and lower thermosphere.
Investigates the chemical composition and physical state of Jupiter's atmosphere and satellites.	PALAPA	Indonesian Communication Satellite	Synchronous satellite communication system for the Republic of Indonesia.	ULYSSES	formerly ISPM (International Solar Polar Mission)	Investigates the properties of the heliosphere (sun and its environment).
Measures gamma radiation levels in the Shuttle environment.	PAM-A	Payload Assist Module A	Upper stage designed to deliver up to 4400 lbs to a geosynchronous transfer orbit.	UNISAT (USL)	United Satellite, LTD.	British communications satellite which provides direct broadcast TV services to the BBC and the ITA.
Small self-contained payload containers providing conventional support to experiments.	PAM-D	Payload Assist Module D	Upper stage designed to deliver up to 2320 lbs to a geosynchronous transfer orbit.	USAT	United States Satellite Corporation	Domestic communication satellite system.
Structure in the payload bay that can hold up to twelve GAS canisters.	PAM-D II	Payload Assist Module D II	McDonnell Douglas payload assist module with 63 in. solid PKM.	USSB	US Satellite Broadcast System	Provides direct to home radio and TV broadcasting.
Atmospheric luminosities investigation.	PDRS/PFTA	Payload Deployment and Retrieval System/Payload Flight Test Article	First object to be deployed and retrieved by the remote manipulator system and is used to test reaction of RMS joints.	UVAM	Ultraviolet Astronomy Mission	
Provides continuous weather coverage of the western hemisphere.	PPE	Phase partitioning Experiment	Study separation behavior of two phase systems generated by the mixture in water of polyglucose and polyethylene glycol.	UVX	Ultraviolet Experiment	Measures the galactic and extragalactic contribution to the diffuse ultraviolet background radiation in the 600-3200 angstrom region.
DOD navigation and positioning system.	PVTOS	Physical Vapor Transport of Organic Solids	Grow crystalline films on selected substrates of organic solids.	VRM	Venus Radar Mapper	Globally map the surface of Venus.
Investigate extraterrestrial gamma-ray sources.	RADARSAT	RADARSAT	Collaborative program designed to remotely monitor the oceans, ice and land over a five year period.	WESTAR	Western Union Telegraph Communication Satellite	A c-band satellite to replenish and expand the Westar system (Western Union domestic communication system).
GTE (General Telephone and Electronics Satellite Corp.) communications satellite.	RCA DBS	RCA Direct Broadcasting System	Satellite system for Radio Corporation of America.			
Determines proper soil moisture content for maximum growth in 0-g.	RME	Radiation monitoring Equipment (formerly Space Radiation Test)	Measures gamma radiation levels in the Shuttle environment.			
GSFC payload carrier for intermediate size experiments attached to the sill of the cargo bay.	ROSAT	Roentgensatellit	Conducts an all-sky survey.			
MSFC payload carrier for intermediate size experiments attached to the shuttle bay.	SAS	Space Adaptation Syndrom	Measures vestibular function, motion sickness susceptibility and spatial orientation ability during prolonged weightlessness.			
Obtains a sample of actinide nuclei (thorium, uranium, etc.) in cosmic radiation.	SATCOL		Colombian communications satellite.			
Observes the universe to gain information about its origin, evolution and disposition of stars, galaxies, etc.	SATCOM		RCA communications satellite.			

Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

Property & Rentals

For sale or lease: Nassau Bay, 2-2.5 townhome, 1,450 sq. ft., covered parking, all appliances. Call J. Thomas Milton, x4861 or 488-5267.

For sale: Friendswood/Wedgewood, 3-2-2, over 2,000 sq. ft., new carpet, freshly painted, 30 x 16 gameroom, 7.75% assumable VA loan, \$70,000. Call 482-5393 after 5 p.m.

For rent: Galveston/Tiki Island, new 3 BR home on canal, dock your boat, fish, swim, TV, master bath spa, week-end, weekly & monthly rates. Call 486-9335.

For sale: Seascape 1, 3-2.5-2, open home, cathedral ceilings, FPL, tiled atrium, ash cabinets, high efficiency AC, ceiling fans, one block to Bay, \$99,950. Call 474-4266.

For sale: Waterview lot at Memorial Point/Lake Livingston, paved streets, utilities, near restaurant, marina, club house, swimming pool, \$15,000. Call 946-3945 after 5 p.m.

For sale or lease: Countryside 3 BR, split plan, country kitchen, dining room, FPL, excellent condition, two yrs. old, \$79,900, FHA assumable 12.5%. Call 554-4019.

For lease: CLC 2 BR condo, kitchen appliances, cable TV, W/D connect, fenced patio, storage room, pool, clubhouse, \$395/mo. Call Cecil Gibson, x3918 or 488-0719.

For lease: CLC 1 BR condo, microwave, appliances, W/D connections, FPL, tennis, exercise room, one week free. Call Jim Briley, x2546 or 488-7901 after 5 p.m.

For rent: New Orleans condo in French Quarter, Jazz Festival weekend April 26-27, sleeps four plus. Call Fay, 486-4945 or 280-3695.

For lease: Heritage Park, 3-2-2, four ceiling fans, microwave, semi-cul-de-sac, three blocks from elementary school, immaculate, \$550/mo. Call 482-4117.

For sale or lease: El Dorado Trace condo, 2-2-2, FPL, W/D, appliances, \$450/mo. or assume 10-25% loan. Call John Lo, x5301 or 482-8457.

For sale: Friendswood, 3-1.5-1, FPL, cathedral ceiling, fenced yard, trees, \$51,000 assume 9.5% VA, low equity. Call 482-7546.

For sale: Forest Bend, 4 or 3-2.5-2, pool, six ceiling fans, formals, game-room, wet bar, trees, no flooding, will pay closing, \$74,500 or assume \$2,700. Call 482-4145.

For sale: League City, 3-2-2, 1,600 sq. ft., corner lot, five yrs. old, will pay closing, \$8,000 equity, \$732/mo. Call 538-4206.

For sale or lease: Custom townhouse, 2 BR, garage, refrig., W/D, FPL, ceiling fans, garbage disp., paid lawn care, marble jacuzzi, microwave, tennis, swimming. Call 554-6378.

For lease: El Dorado Trace, 2-2, split BR, W/D, FPL, ceiling fan, appliances, smoke/security alarms, pool and rec key. Call Rose, x1341 or 488-6046 after 4:30.

For sale or lease: CLC, 3-2.5-2 (carport) townhouse, completely renovated, new paint, carpet and tile, \$65,000 or \$600/mo. Call Ed White, x5489 or 480-0273.

For sale/lease: Nassau Bay, 4-2-2 townhouse, 2,200 sq. ft., master down, new carpet, paint, roof, large sundeck, garage, kitchen, 20 ft. FPL, atrium, purchased for \$127,000, sell, \$114,900. Call Jerry, x3561.

For rent: Baywind II, 2-2-2 townhouse, roommate plan, W/D, FPL, walk to JSC, \$450/mo. Call Chuck, x5101 or 480-8452.

For lease: Egret Bay condo, 2-2-2 cp, W/D, fan, new carpet, clean, \$400/mo., references. Call 486-8551 or 333-5260.

For sale: Waterfront lot on 244 acre lake with access to excellent bass, catfish and bream fishing in Brazoria County. Call Don, 280-6307 or 554-6205.

For lease: League City, 3-1.5, large den/dining area, cathedral ceiling, fenced, corner lot, \$495/mo. Call 488-6479.

For rent: Friendswood 3-1.5-1, cathedral ceiling, drapes, FPL, fenced, \$450/mo. plus deposit. Call 482-7546.

For lease: Forest Bend 3-2.5-2 CP, townhouse, living room, den, lots of storage, option to buy, \$435/mo. plus deposit. Call 333-2322.

For sale: Dickinson, 2-1, 1983 mobile home, 14' x 64' in adult section of park with pool, lots of extras, energy efficient, \$750 and assume \$297/mo. Call Garner, x5827 or 534-3499 evenings.

Cars & Trucks

1975 Dodge window van, blue/white, auto, PS, PB, floor has rust problem,

small radiator leak, not running, \$500. Call Dick, 729-0852 after 6 p.m.

1979 Corvette, black/black, AC, PW, PS, tilt wheel, tinted windows, AM/FM/cassette, custom wheels, excellent condition, \$9,500 OBO. Call Blaine Hammond, x3856.

1983 Ford Thunderbird, turbo bird, 5 speed, loaded, \$8,400 OBO. Call Glen, x5615 or 280-8644.

1973 Dodge Maxi-Van, AC/PB/PS, 360 engine. Call 480-1340 after 6 p.m.

1978 Pontiac Grand Prix, excellent condition, \$2,300 OBO. Call 333-1663 after 6 p.m.

1981 Pontiac Phoenix, V6, PS, PB, AC, AM/FM/cassette, many extras, 70K miles, runs well, \$2,750 OBO. Call Leo, x4045 or 554-6460 evenings.

1980 T-Bird Town Landau, one owner, loaded, white leather, all power, computerized console, \$5,000 OBO. Call 486-8513.

1977 T-Bird, loaded, good condition, \$2,500 OBO. Call Billie, 482-4365 after 5 p.m.

1983 Subaru GL, 2 dr., black w/gray interior, auto, PS, PB, AM/FM stereo, AC, 24K miles, \$7,100 OBO, anxious to sell. Call 532-3644 after 5 p.m.

1984 Ford Thunderbird, auto, AC, AM/FM, 12K miles, midnight canyon red, \$9,000. Call Linda Schultz, x4910 or 532-4110, evenings.

1975 Ford Mustang-II, AC, stereo, new paint, runs well. Call 534-2626 after 5 p.m.

1977 Mercedes Benz, gold metallic coupe, 230cc, great condition, AC, auto, sun roof, best offer. Call 280-7732 or 559-2030.

1979 VW Rabbit, 4 spd., excellent condition, AM/FM/cassette, reliable, \$3,000 OBO. Call Jon, 332-8363 before 1:30 p.m.

1985 Dodge Ram 100, long bed, 6 cyl., 4 spd., PB/PS/AM/FM/cassette, 3,000 mi., 20 m.p.g. Call E.D. McAnelly, x5441 or 332-4732.

1977 Volare station wagon, 6 cyl., 4 spd., AC, one owner, \$1,450. Call George Richeson, x4361 or 488-8761.

1979 Chevy Monte Carlo Landau, PS/PB/AM/FM/cassette, auto., blue/tan, good condition, \$2,900 OBO. Call Sandra Sims, x4748 or 332-7907 after 5 p.m.

1974 Pontiac LeMans, 4 dr., AC/AM/FM/cass/8-track, original owner, 75K miles, \$500. Call Mary, x2876.

1983 Subaru GL, 2 dr., black/gray interior, auto, AC/PS/PB/PW, AM/FM stereo, 24K miles, \$7,100 OBO. Call 532-3644 after 5 p.m.

1968 AMC Rambler Wagon, six cyl., 3 spd., AC, new front suspension, carb., tires, battery, 18-22 m.p.g., excellent condition, \$1,250 OBO. Call 484-0264 after 5 p.m.

1975 Toyota Corolla, 1600, 2TC, doesn't run, good for parts, best offer. Call McMillan, x3601.

1981 280ZX, 5-speed, 29K miles, rear spoiler, side and back louvers, T-tops, nose bra, headlight covers, excellent condition, silver/blue interior, \$10,950. Call Cathy, 333-0757.

1978 280Z 2+2, automatic, 53K miles, excellent condition, burgundy w/black interior, \$5,300. Call Cathy, 333-0757.

1973 VW Superbeetle, must sell, \$850 OBO. Call Chris, x5391 or 488-3451 evenings.

1978 Chevy Nova, two or six cyl., \$1,300. Call Vic, x2623 or 534-2134 after 5 p.m.

1979 Fiat Brava, blue, 2 dr., auto., PS/PB, needs water pump, leaks oil, looks great, \$1,000. Call Dick, 729-0852 after 6 p.m.

1979 turbo-charged Riviera, 59K miles, \$1,600 below wholesale, AC, muffler, vinyl top, seats, loaded, \$3,900. Call Jerry, x3561 or 474-4310.

1983 Cadillac Coupe de Ville, excellent condition w/transferrable warranty. Call Diana, x4851 or 474-4325 evenings.

1973 Olds Delta 88, 73K miles, looks good but needs some work, \$600. Call Debbie, 326-3237.

1950 Chevy Deluxe, 2 dr., one owner, completely original, runs great. Call R. Payne, x7236.

1974 Dodge Dart Sport, auto, 318 cu. in., PS/PB/AC, no rust, clean, runs well, new tires, \$800 OBO. Call Harold, x6353.

1972 VW bug, 500 miles on rebuilt engine, new paint, runs great, \$1,600; extra set of VW fenders and bumpers, \$100. Call Pat, 280-3519 or 482-8233 after 5 p.m.

1981 Honda Prelude w/sun roof, dark blue, \$6,800. Call George, x2991 or 480-9810.

1972 Lincoln Mark IV, good condition, good tires, air, AM/FM radio, leather upholstery, classic, \$3,500. Call 488-5564.

Boats & Planes

1984 Starcraft, 16 ft. extra wide jon boat, 1984 15 h.p. Chrysler motor, galvanized trailer, six gallon tank, bass seats, cushions, never in salt water, \$2,250. Call Mike Gherman, x7804 or 332-7804.

18 foot fiberglass tri-hull, walk-thru windshield, 125 h.p., Johnson O/B, galvanized tilt trailer, Buddy bearings, storage-kept, all access., \$3,250. Call Larry, x4804.

Sunfish sailboat, needs light fiberglass work, no trailer, can deliver, \$200. Call George, x2991 or 480-9810.

Airplane rental, C-150, Clover Field, \$32/hr. wet, 10 hour block/\$300. Call Paul or Kate, 333-6857 or 482-4430.

14 foot Catamaran, good condition, extra sail, \$1,095. Call Karl, x2411 or 333-3544.

1984 Invader 171 I/O, 125 Volvo w/trailer, ski tow bar, two props, \$6,300. Call Bob, x4031 or 486-1766 after 5 p.m.

Model 470 racing sailboat, incl. two sets of sails and a reconditioned trailer, \$1,500. Call 486-7610.

24' Sovereign sailboat, diesel, roller-furling, bimini, stove, coast guard package, extras, equipped for cruising, must sell. Call David Cree, x6411 or 481-1158 after 5 p.m.

12 ft., semi-V aluminum boat, \$85. Call Ted Guillory, 480-2367.

Cycles

1971 Honda CB-450, mint condition, wixom fairing, crash bars, luggage rack, 4,300 actual miles, \$1,000. Call 486-9335.

1972 Honda 750 automatic, excellent cond., one owner, garage kept, \$995. Call 554-4019.

Boys bike, 20", 10-speed, good condition, \$35. Call Karl, x2411 or 333-3544.

Audiovisual & Computers

O'Sullivan computer table, 52" L, 24" D, model 709A, used very little, excellent cond. Call John, x3905 or 482-1501 after 5 p.m.

19" Zenith Chromocolor T.V., \$100; portable AC/DC 8-track tape player w/tapes, \$35; AM-FM table radio, \$100. Call J.H. Levine, x3655 or 488-5564.

Texas Instruments 99/4A computer, extended basic and access., games, excellent condition; Realistic stereo receiver/amplifier, 32 watts, walnut veneer cabinet, like new. Call 488-2822.

Hayes micromodem IIe w/Smartcom, 3 mos. old, \$190. Call Jeff, x4021 or 488-2405 after 6 p.m.

Model 810(TI) printer, forms control option, excellent condition. \$550. Call 486-7610.

TI 99/4A complete home computer system, with business software and books, \$1,200. Call 747-3977.

Commodore C64, 1541 disk, 1525 printer, Dataset, Vicmodem, plus home software and games, \$350. Call Don, x6596 or 554-6733.

Household

Whirlpool full size washer/dryer, mint condition, will sell or trade for good compact W/D combination. Call Verna, x2471 or 943-2529.

Matching couch, love seat, ottoman, brown w/light trim, excellent cond., \$300 OBO. Call Jeff or Kathy, 488-2405 after 6 p.m.

Glass top coffee table, (41x41x15), \$50 OBO. Call 532-4219.

Antique mahogany wardrobe, beveled glass mirror in center, 3 doors, two bottom drawers, shelves down one side, \$450 OBO. Call David, 280-7836 or 554-5859.

Two fold-out couch/beds, navy blue, full size when unfolded, \$115 and \$70 for the other. Call Eric, 538-3273 after 6 p.m.

Contemporary, tan velour, sofa, chair, ottoman, good cond., \$300; Sealy double-size mattress, box springs, frame, like new, \$150; Double-size sheet sets, \$10/set. Call 482-2622 after 6 p.m.

Sears Kenmore frost-free refrigerator/freezer, excellent condition, harvest gold color, \$300. Call 554-4133 after 5 p.m.

Crystal, Solitaire by Lenox, 4 stems (water or iced tea not sure), \$21/stem; China, Montclair by Lenox, dinner plates, \$14; salad plates, \$10, bread plates, \$7, cups and saucers, \$21. Call 554-7371 between 7-9 p.m.

Kenmore apartment size washer and dryer, 3 yrs. old, excellent condition, all attachments, \$300 for both. Call Billie, 482-4365 after 5 p.m.

Sofa w/built-in bed, vinyl, \$70. Call 480-1340 after 6 p.m.

Bedroom furniture, Ethan Allen/Kling antique pine king size cannonball bed w/Sealy posturepedic mattress, springs, night stand, chest-on-chest (chiffarobe), excellent condition, \$2,400 new, sell \$1,650. Call Blaine Hammond, x3856.

G.E. Deluxe 17.7 cu. ft. frostless refrigerator, icemaker, almond color, glass shelves, new, \$650. Call Chuck, x5101 or 480-8452.

Dining room set, table, 4 chairs, Spanish style, like new, \$85. Call Joan, x3057 or 486-1058 after 5 p.m.

Jenny Lind baby crib and mattress, with matching 3-drawer dresser/changing table and 4-drawer chest; car seat, walker. Call Leo, x4045 or 554-6460 evenings.



Wanted

Fiberglass bass boat w/40-85 h.p. motor, galv., trailer, aerated live wells. Call Don, 280-6307 or 554-6205.

Riders for vanpool, no smokers, Meyerland Plaza to NASA. Call Richard Heetderks, x4651 for more information.

Roommate, furnished room w/ phone, TV, cable, storage in garage, kitchen privileges, no smoking, no pets, no children, 5 miles from NASA, \$200/mo., all bills paid. Call Keith, x3643 or 332-8251.

Female roommate to share 3-2-2 house w/same, League City area. Call 554-6564, mornings.

Ride from Angleton area to Bldg. 1, 7:30 to 4:00. Call Sharon Jepson, x2658.

Housemate needed to share 3-2-2 in League City, male/female, \$190/mo. plus utilities. Call 554-7706.

Nikon 35mm camera model "F" or "F2" any condition, will buy or trade. Call Jim, x5956.

Miscellaneous

Lynx USA golf clubs, irons 2-SW, \$125; titanium shaft driver, 4 wood, \$125. Call Steve Gorman, x2758 or 280-8181.

Pontiac Phoenix mini spare tire, \$20; large, computer desk, \$20. Call Steve, 280-8181.

Wedding dress and veil, Michel-

angelo designer, white, Italian lace, sequins, pearls from top to bottom, never used, size 9, \$350. Call V. Lee, 495-8864.

Alpaca fur rug, thick, two 4' x 6' and one 5' round, \$235 each or \$600/3; two thick padded Ford van bench seats, \$150 ea. or \$255 both. Call John Lo, x5301 or 482-8457.

Seeking male great dane to stud for fawn female. Call Randy, 480-5194, evenings.

Free to good home: large, happy, healthy, smart puppy. Looks like a Husky. Call Brian, x5111 or 480-5194.

Kidder XK/1 Kevlar slalom ski w/boot, Connely front plate binding, rear adjustable boot, excellent ski, condition, price, \$150. Call 474-5258 after 4 p.m.

One pair combo skis, two ski ropes, life jackets, etc, \$40 for all. Call Keith, x3501.

New DP 300 Body Tone mini-gym, \$125 OBO. Call Connie, x4031 or 487-3223 after 6:30 p.m.

Boys bicycle, regular, \$30; girls bicycle, medium, \$35; kids tricycle, \$15. Call Jim, x3676.

Lawnboy mower, old but runs well, recently overhauled, grass bag, mulcher, manual, \$125. Call Jim, x3676.

Nikkor zoom lens 50-300 mm, largest zoom range of any 35 mm in the world, has A1 feature; Rockwell 12 inch radial arm saw, professional model complete w/12 inch carbide tip saw blade and heavy duty steel stand, Call Joe, x4905.

Rent my motor home by day or week, self-contained w/onboard generator, roof air, the comforts of home on wheels. Call Dave, x5111 or 480-0202 after 6 p.m.

Aluminum camper top for 8 ft. pickup, Winnebago pickup, \$150. Call 482-7073.

Bass guitar, \$200; wireless system, \$150, both in excellent condition; Marshall 50 watt combo guitar amplifier, \$250 Benez Roadstar guitar w/locking tremello case, \$250. Call 481-2195.

Gun cabinet, holds six guns, drawer, like new, \$80 OBO. Call 532-4219.

Siberian Husky/Labrador pups, 4 wks. old, two males, cinnamon brown and white, two females, black and white. Call Steve, x5589 or 480-2538.

Two tickets, Houston Grand Opera, La Traviata, April 30, Jones Hall. Call Ted, x4331.

Golden Labrador retriever, no papers, 10 mos., male, has all shots, negotiable. Call Craig, x2691.

Four 6 x 15" wheels, \$80. Call 482-7546.

Sliding glass patio door, good cond., \$40; new P235/R15 B.F. Goodrich truck tire, \$45. Call Larry, x4804.

Boys parka jacket, like new, navy, size 14; G.E. automatic grill & waffle iron, both items excellent condition. Call 488-2822.

1975-1977 El Camino gemtop cover, white, good condition, \$150. Call Jerry, x5803.

Cookin' in the Cafeteria

Week of April 15 — 19, 1985

Monday — French Onion Soup; BBQ Sliced Beef, Parmesan Steak, Spare Rib w/Kraut, Chili & Macaroni (Special); Ranch Style Beans, English Peas, Mustard Greens. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Split Pea Soup; Meatballs & Spaghetti, Liver & Onions, Baked Ham w/Sauce, Corned Beef Hash (Special); Buttered Cabbage, Cream Style Corn, Whipped Potatoes.

Wednesday — Seafood Gumbo; Cheese Enchiladas, Roast Pork w/Dressing, BBQ Link (Special); Pinto Beans, Spanish Rice, Turnip Greens.

Thursday — Beef & Barley Soup; Roast Beef w/Dressing, Fried Perch, Chopped Sirloin, Chicken Fried Steak (Special); Whipped Potatoes, Peas & Carrots, Buttered Squash.

Friday — Seafood Gumbo; Fried Shrimp, Baked Fish, Beef Stroganoff, Fried Chicken (Special); Okra & Tomatoes, Buttered Broccoli, Carrots in Cream Sauce.

Week of April 22 — 26, 1985

Monday — Cream of Potato Soup; Franks & Sauerkraut, Stuffed Pork Chop, Potato Baked Chicken, Meat Sauce & Spaghetti (Special); French Beans, Buttered Squash, Buttered Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Navy Bean Soup; Beef Stew, Liver & Onions, Shrimp Creole, Smothered Steak w/Dressing (Special); Corn, Rice, Cabbage, Peas.

Wednesday — Seafood Gumbo; Roast Beef, Baked Perch, Chicken Pan Pie, Salmon Croquette (Special); Mustard Greens, Italian Green Beans, Sliced Beets.

Thursday — Beef & Barley Soup; Beef Tacos, Diced Ham w/Lima Beans, Stuffed Cabbage (Special); Ranch Style Beans, Brussels Sprouts, Cream Style Corn.

Friday — Seafood Gumbo; Fried Shrimp, Deviled Crabs, Ham Steak, Salisbury Steak (Special); Buttered Carrots, Green Beans, June Peas.